Docket No.: U2054.0145

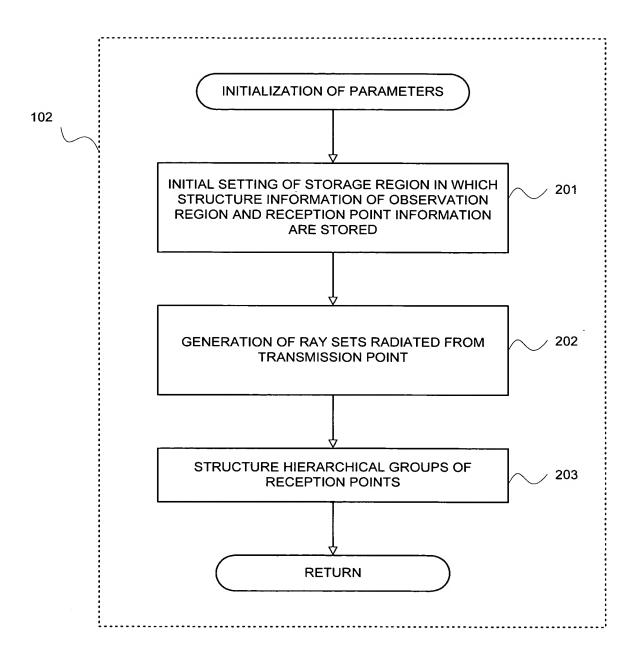
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 1 of 35

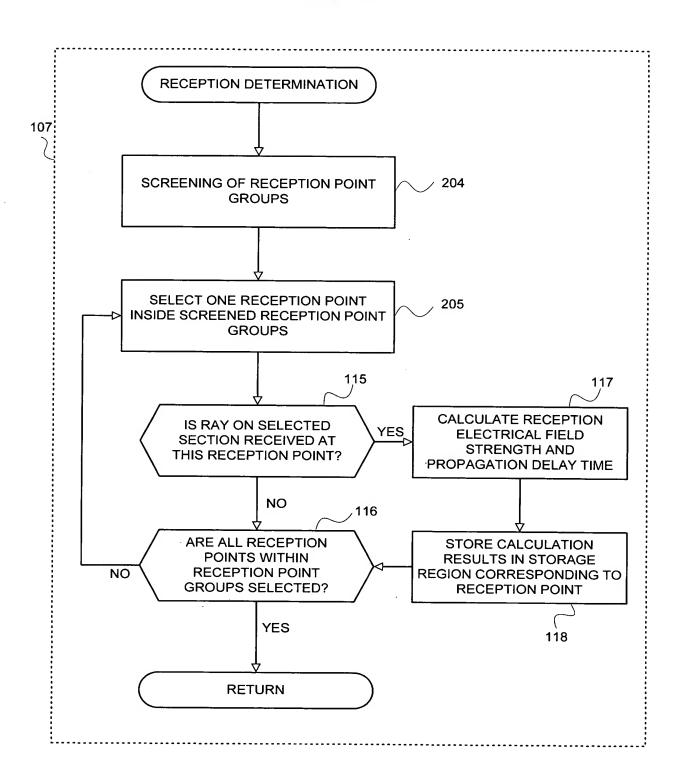
FIG. 1



App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM
OF RAY, AND RADIO WAVE PROPAGATION
CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 2 of 35

2/35

FIG. 2



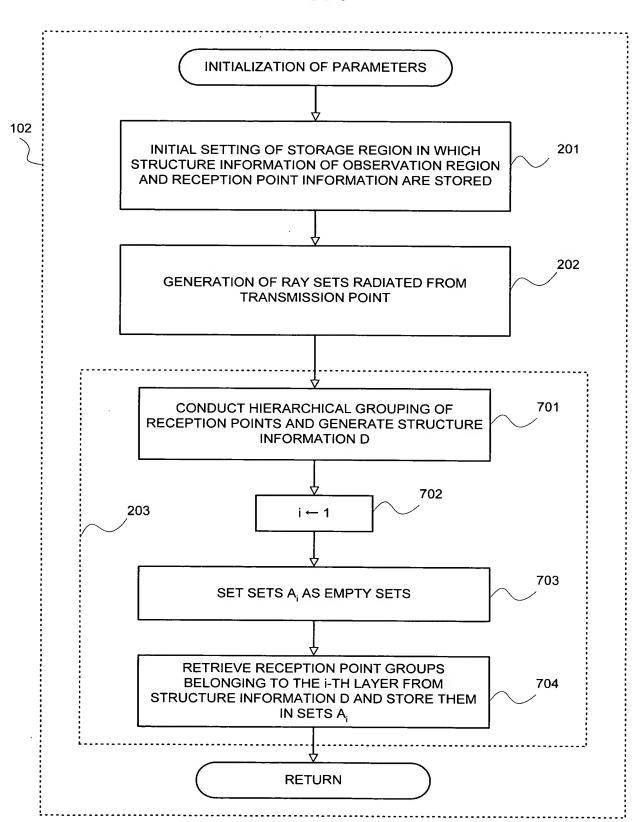
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 3 of 35

Docket No.: U2054.0145

FIG. 3

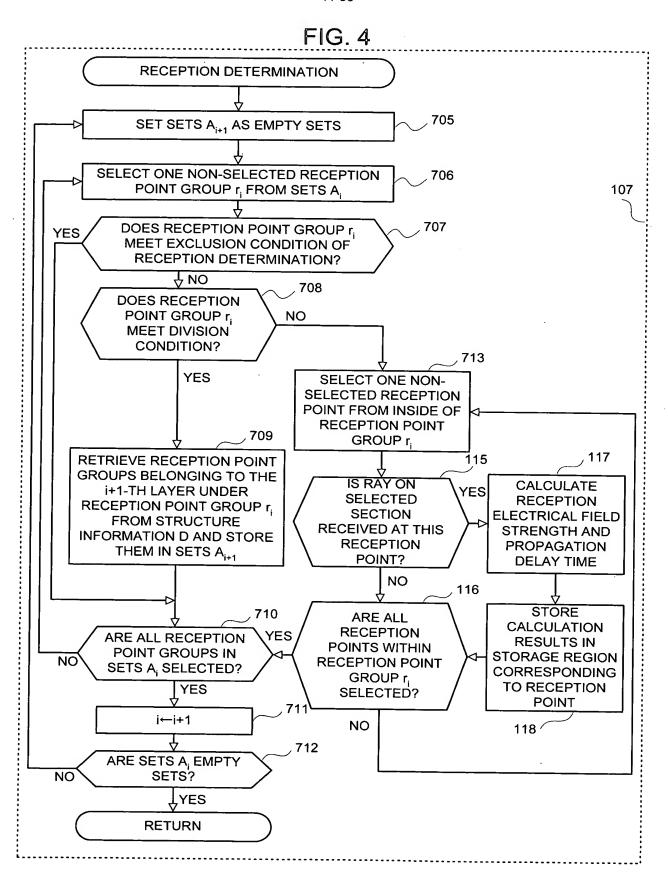


Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

Docket No.: U2054.0145

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 4 of 35

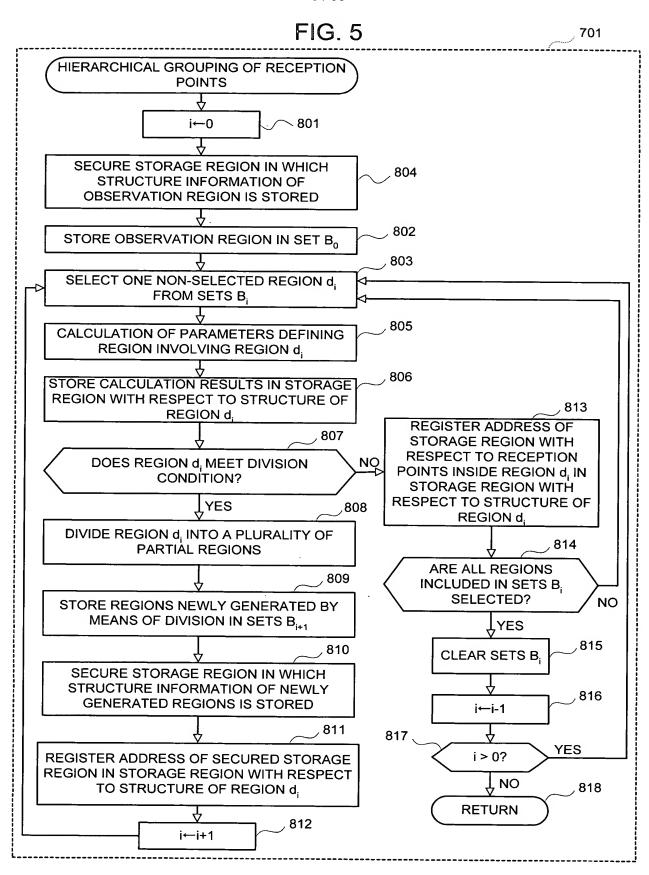


App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 5 of 35



App No.: Not Yet Assigned Docket No.: U2054.0145 Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM
OF RAY, AND RADIO WAVE PROPAGATION
CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 6 of 35

6/35

## FIG. 6

STRUCTURE INFORMATION D $_{ij}$  WITH RESPECT TO THE j-TH PARTIAL REGION d $_{ij}$  OF THE i-TH LAYER

STRUCTURE INFORMATION D $_{\parallel}$  WITH RESPECT TO THE j-TH PARTIAL REGION d $_{\parallel}$  OF THE i-TH LAYER

904

PARAMETERS DEFINING REGION INVOLVING d<sub>ii</sub>

TOTAL NUMBER  $m_{ij}$  OF PARTIAL REGIONS OF THE i+1-TH LAYER UNDER  $d_{ii}$ 

ADDRESS OF STORAGE REGION IN WHICH STRUCTURE INFORMATION OF PARTIAL REGIONS OF THE i+1-TH LAYER UNDER  $d_{ij}$  IS STORED

(IN A CASE WHERE THE i+1-TH LAYER≠RECEPTION POINT LAYER)

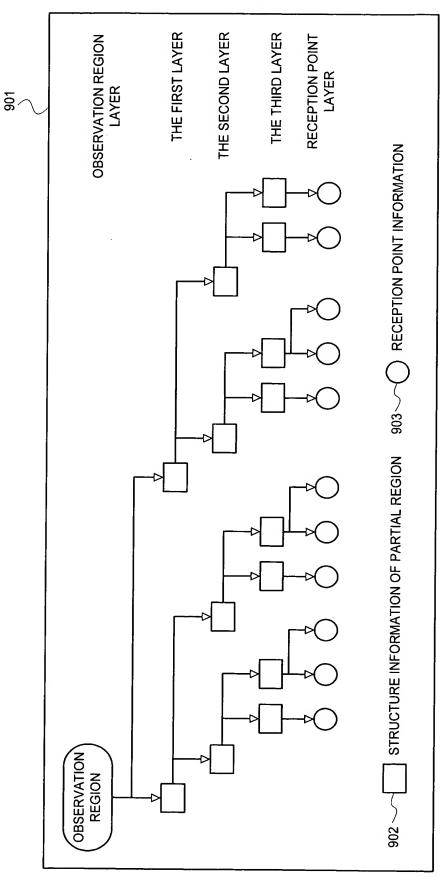
PARAMETERS DEFINING REGION INVOLVING d<sub>ii</sub>

905

TOTAL NUMBER  $m_{ij}$  OF RECEPTION POINTS OF THE i+1-TH LAYER UNDER  $d_{ij}$ 

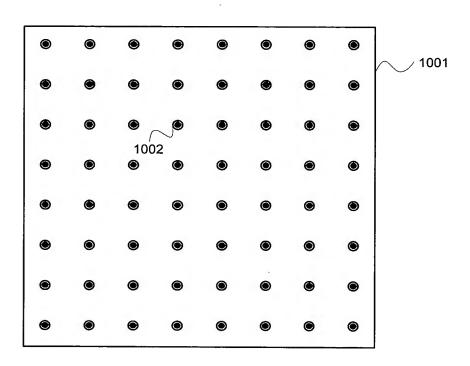
ADDRESS OF STORAGE REGION IN WHICH RECEPTION POINT INFORMATION OF THE i+1-TH LAYER UNDER d<sub>ij</sub> IS STORED

(IN A CASE WHERE THE i+1-TH LAYER=RECEPTION POINT LAYER)



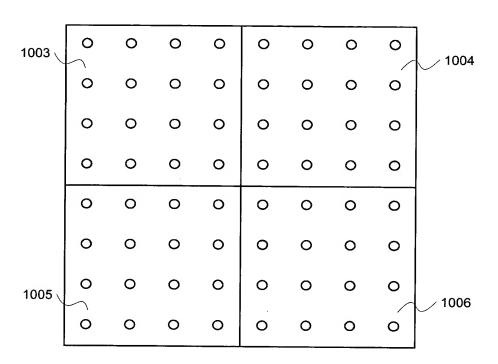
App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM
OF RAY, AND RADIO WAVE PROPAGATION
CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 8 of 35

FIG. 8



App No.: Not Yet Assigned Docket No.: U2054.0145 Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 9 of 35

FIG. 9



Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 10 of 35

FIG. 10

0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 11 of 35

FIG. 11

0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	Ö	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

Docket No.: U2054.0145

OF RAY, AND RADIO WAVE PROPAGATION CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 12 of 35

FIG. 12

		110.12								
	· .					•			1007	
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	. 0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 13 of 35

Docket No.: U2054.0145

FIG. 13

0	0	0	0	0	0	0	0	0	0	Ö
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

Docket No.: U2054.0145

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 14 of 35

FIG. 14

0	0 .	0	0	0	0	0	0	0	0	0
0	0	<b>o</b> ,	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

App No.: Not Yet Assigned

Docket No.: U2054.0145 Inventor: Yoshinori Watanabe Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 15 of 35

FIG. 15

0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0.	0

Docket No.: U2054.0145

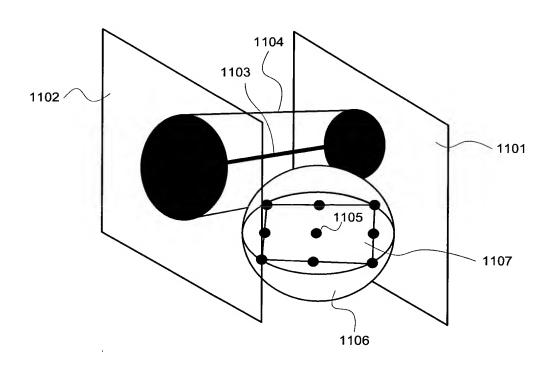
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

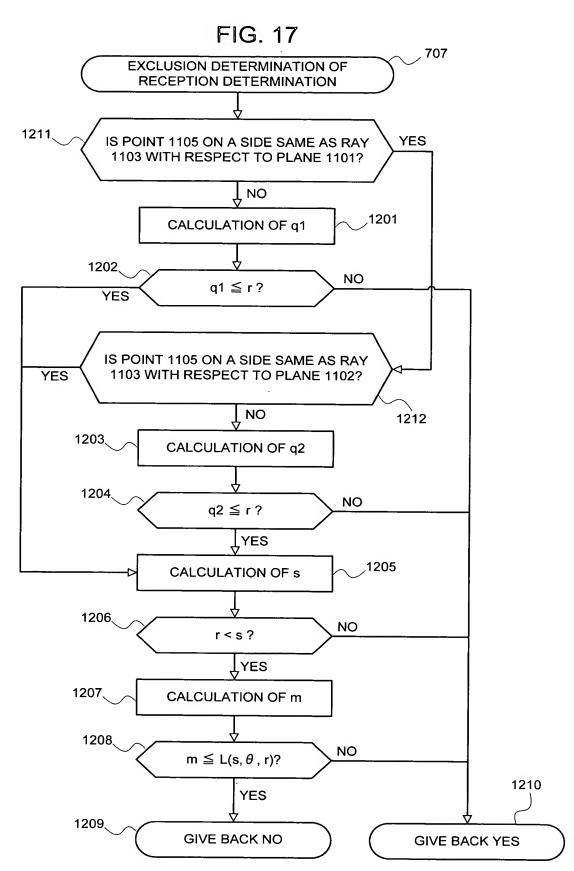
CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 16 of 35

FIG. 16



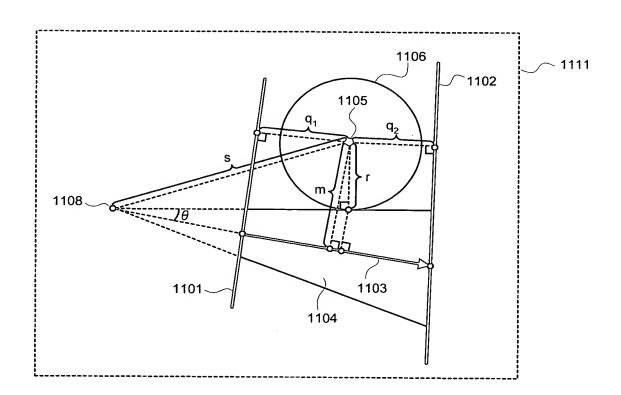
App No.: Not Yet Assigned Docket No.: U2054.0145 Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 17 of 35



App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM
OF RAY, AND RADIO WAVE PROPAGATION Docket No.: U2054.0145

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 18 of 35

FIG. 18



App No.: Not Yet Assigned Inventor: Yoshinori Watanabe Title: RECEPTION DETERMINATION METHOD AND SYSTEM

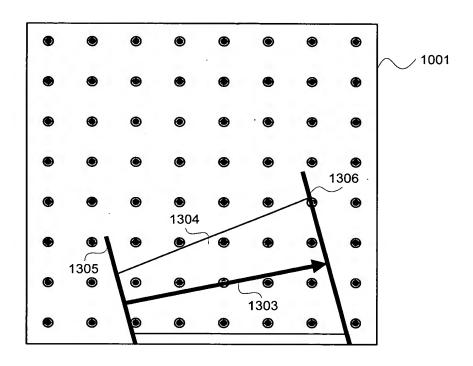
Docket No.: U2054.0145

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

.....Sheet 19 of 35

FIG. 19



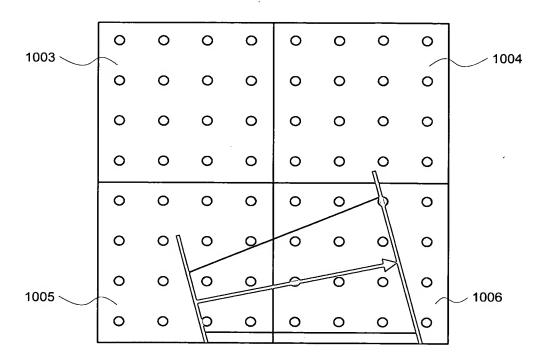
Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 20 of 35

FIG. 20



ned Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 21 of 35

FIG. 21

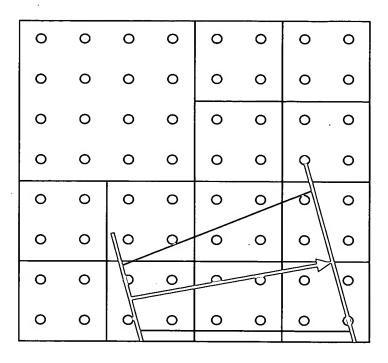
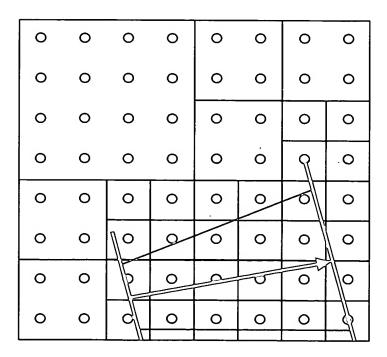


FIG. 22



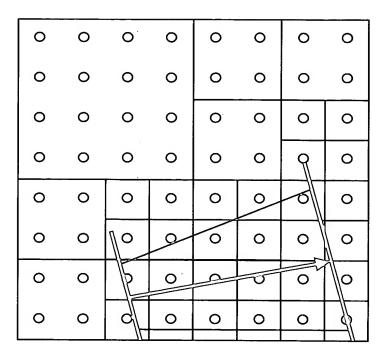
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

Docket No.: U2054.0145

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 22 of 35

FIG. 23



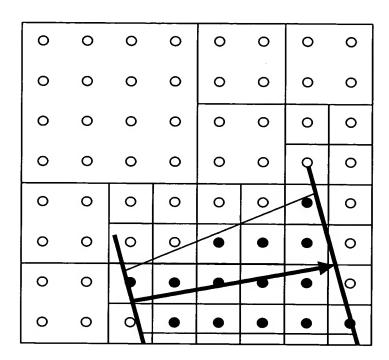
Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 23 of 35

FIG. 24



OF RAY, AND RADIO WAVE PROPAGATION CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 24 of 35 24 / 35 FIG. 25 **START** ,102 **INITIALIZATION OF PARAMETERS** <sub>\_</sub>103 SELECT ONE RAY RADIATED FROM TRANSMISSION POINT 104 PATH TRACKING OF RAY 112ر SELECT PATH SECTION DURING **TRACKING** 120 IS END POINT OF PATH SECTION TRANSMISSION NO POINT or DOES THE SAME VALUE CONTINUE Q TIMES AT UPPER LIMIT OF DIVISION HIERARCHY? LYES SET UPPER LIMIT OF DIVISION HIERARCHY AS MAXIMUM HIERARCHY 107 RECEPTION DETERMINATION CALCULATE COST OF EACH HIERARCHY EQUAL TO OR 122 LESS THAN UPPER LIMIT OF DIVISION HIERARCHY \_\_\_ 123 SET HIERARCHY WHICH BECOMES MINIMUM COST AS UPPER LIMIT OF DIVISION HIERARCHY 105 NO IS END CONDITION OF PATH TRACKING MET? YES 109 NO ARE ALL RAYS RADIATED FROM TRANSMISSION POINT SELECTED? \_YES 110 **OUTPUT RESULTS END** 

App No.: Not Yet Assigned

Inventor: Yoshinori Watanabe

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

Docket No.: U2054.0145

inventor: Yoshinori Watanade Title: RECEPTION DETERMINATION METHOD AND SYSTEM

Docket No.: U2054.0145

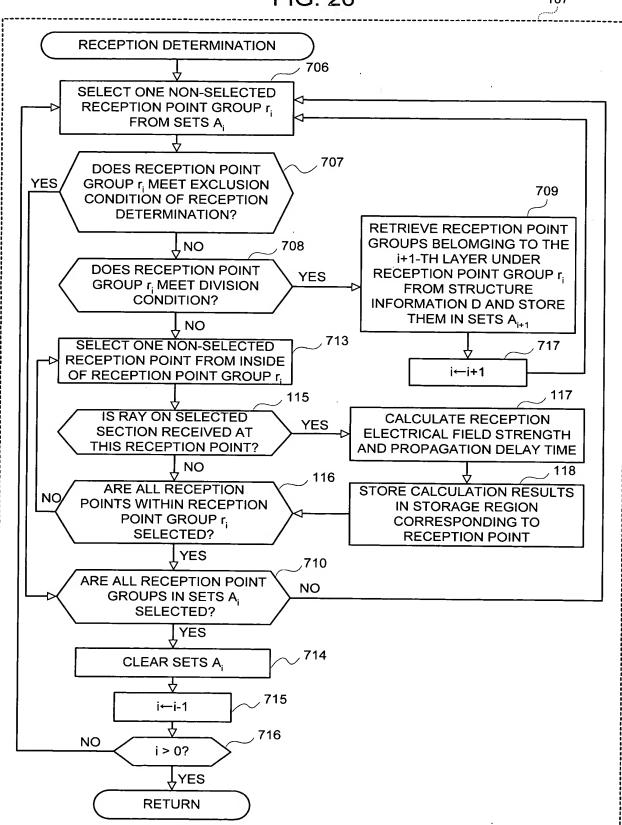
OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 25 of 35

25 / 35

FIG. 26

107

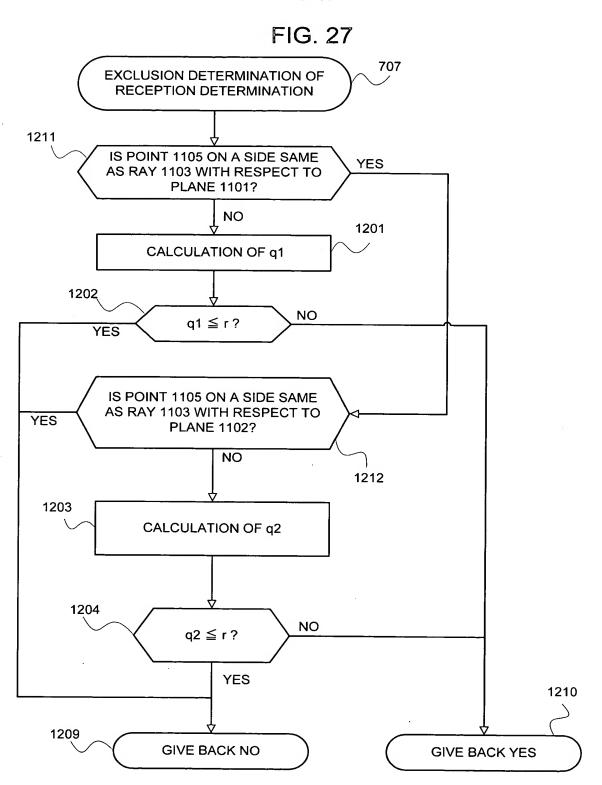


Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 26 of 35



Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 27 of 35

FIG. 28

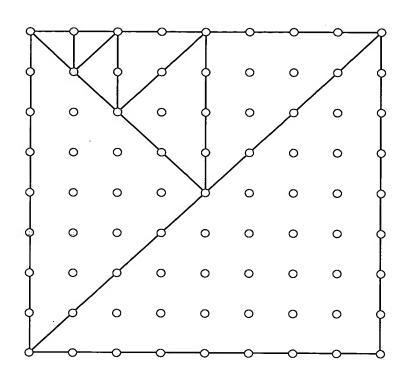
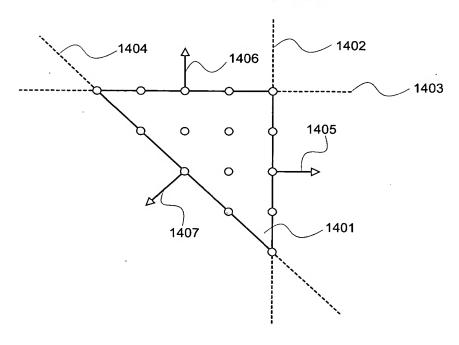


FIG. 29



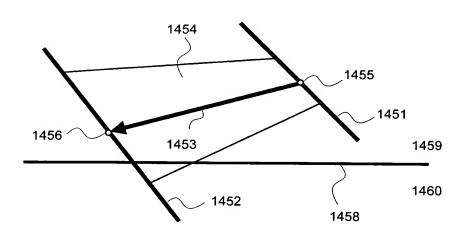
Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 28 of 35

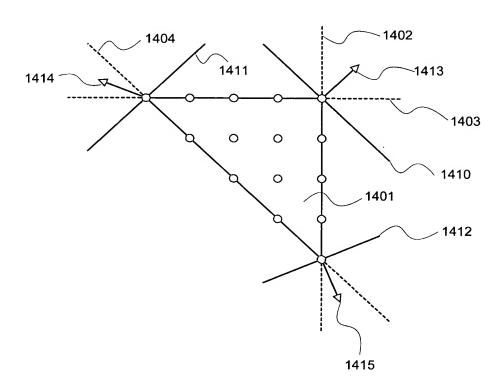
FIG. 30



App No.: Not Yet Assigned Docket No.: U2054.0145
Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM
OF RAY, AND RADIO WAVE PROPAGATION Docket No.: U2054.0145

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 29 of 35

FIG. 31



Docket No.: U2054.0145

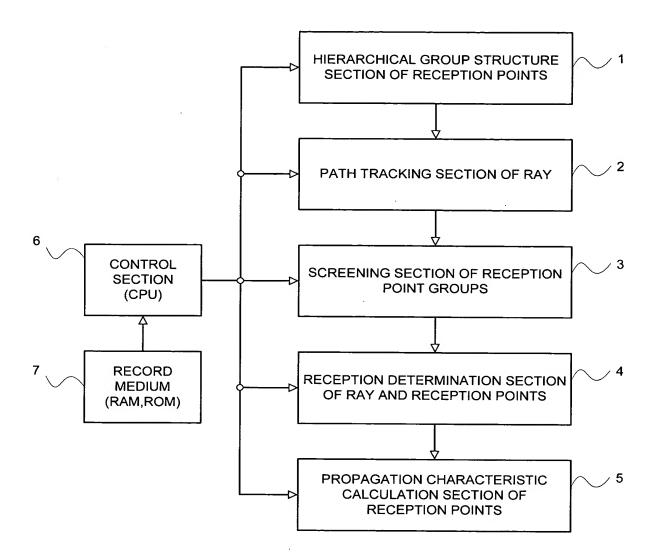
Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 30 of 35

FIG. 32



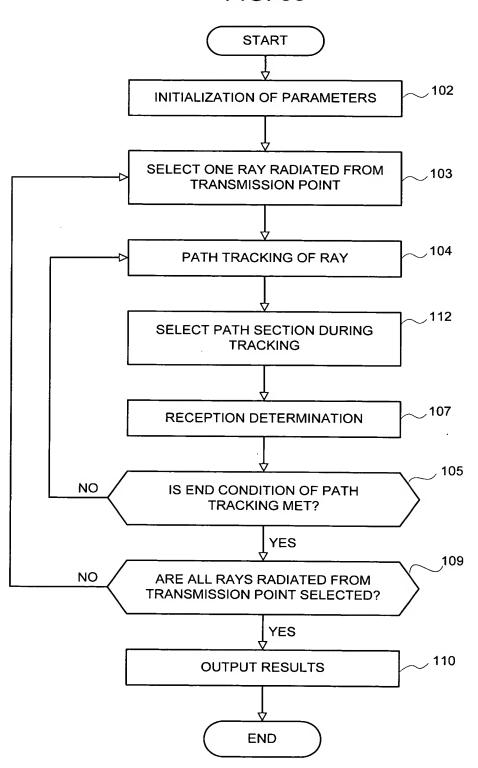
App No.: Not Yet Assigned

Docket No.: U2054.0145 Inventor: Yoshinori Watanabe Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 31 of 35

FIG. 33



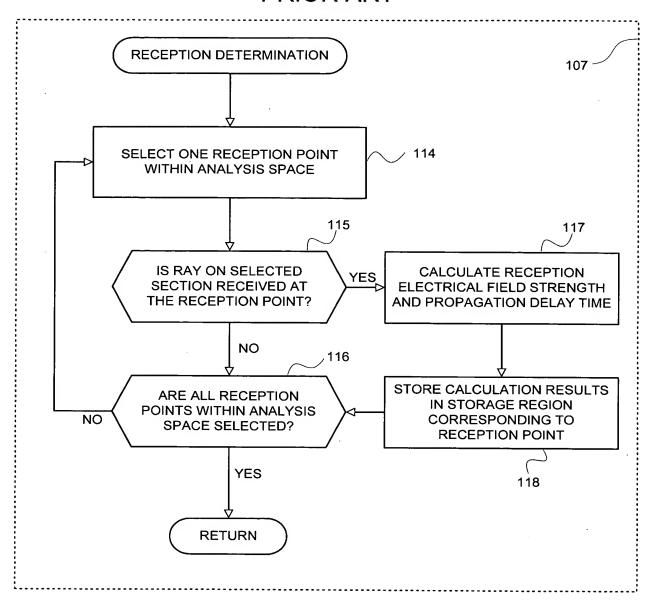
Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM OF RAY, AND RADIO WAVE PROPAGATION

OF RAY, AND RADIO WAVE PROPAGATION CHARACTERISTIC ESTIMATION METHOD USING THEM

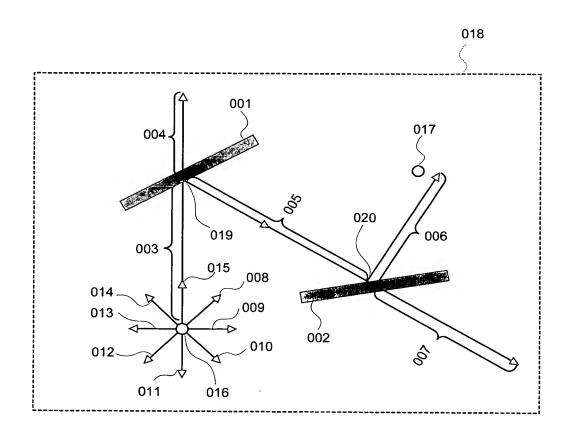
Sheet 32 of 35

FIG. 34 PRIOR ART



App No.: Not Yet Assigned Docket No.: U2054.0145 Inventor: Yoshinori Watanabe
Title: RECEPTION DETERMINATION METHOD AND SYSTEM
OF RAY, AND RADIO WAVE PROPAGATION
CHARACTERISTIC ESTIMATION METHOD USING THEM
Sheet 33 of 35

FIG. 35



Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION

CHARACTERISTIC ESTIMATION METHOD USING THEM Sheet 34 of 35

FIG. 36 **PRIOR ART** 

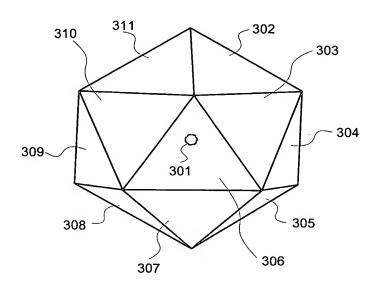
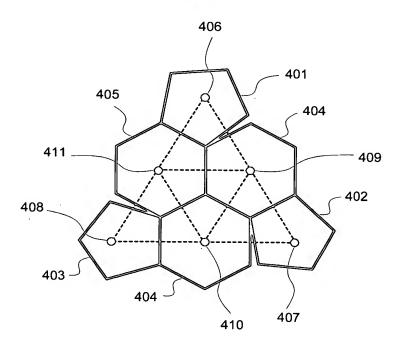


FIG. 37 PRIOR ART



Docket No.: U2054.0145

Title: RECEPTION DETERMINATION METHOD AND SYSTEM

OF RAY, AND RADIO WAVE PROPAGATION CHARACTERISTIC ESTIMATION METHOD USING THEM

Sheet 35 of 35

FIG. 38 PRIOR ART

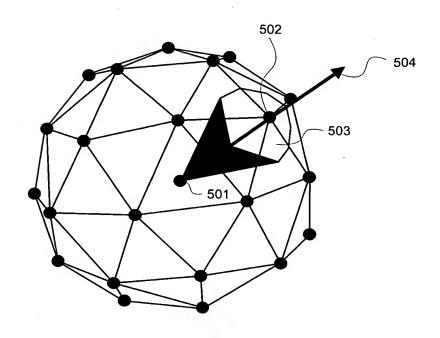


FIG. 39 PRIOR ART

